FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

December 8 to 14, 2013 (Week 50)

Overall Summary

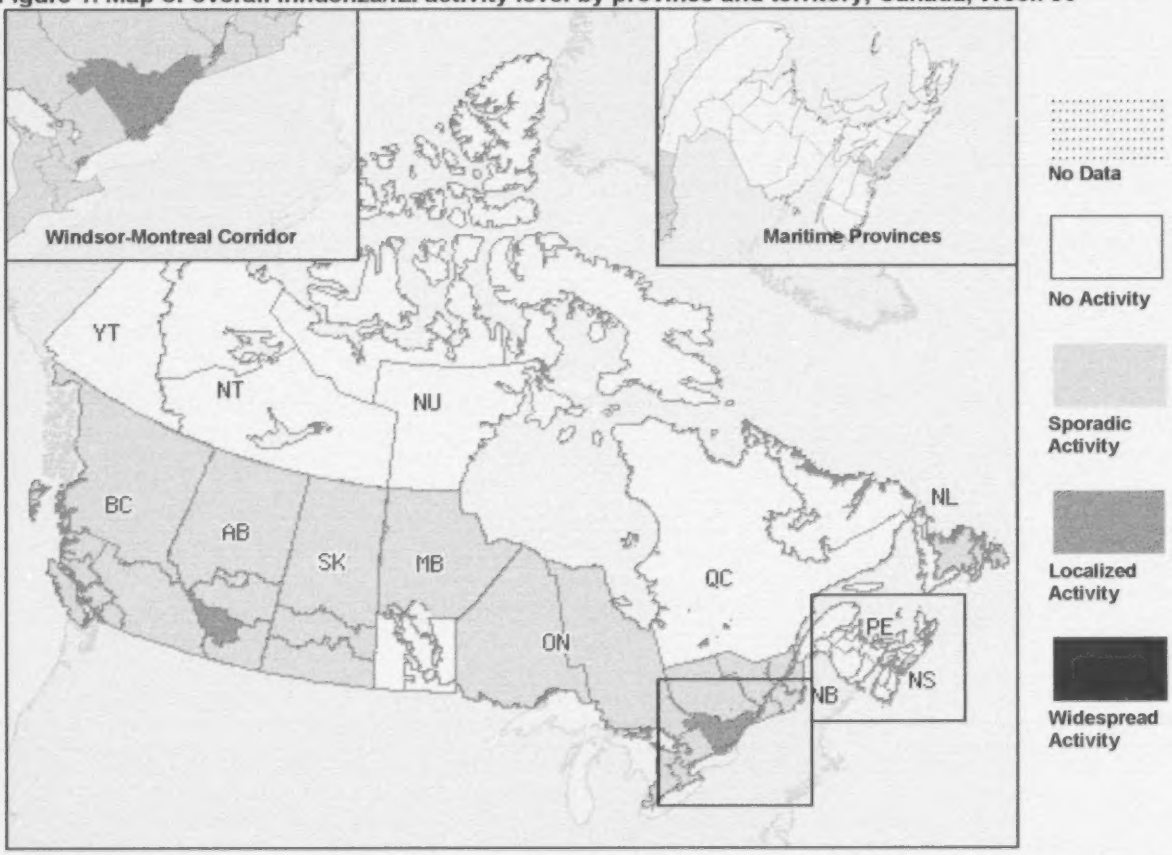
- Influenza activity in Canada continued to increase in week 50. The number of regions that reported sporadic or localized influenza/ILI activity increased, with activity reported in 8 of the 10 provinces.
- Influenza A(H1N1)pdm09 remains the predominant influenza virus type this season.
- The number of paediatric hospitalizations with influenza continued to increase, while adult hospitalizations decreased slightly in week 50; 98% of adult cases and 81% of paediatric cases from sentinel hospital surveillance were influenza A, predominantly A(H1N1)pdm09.

Note: The FluWatch report will not be published on Friday, December 27th, 2013. A combined report for weeks 51 and 52 will be published on Friday, January 3rd, 2014.

Influenza/ILI Activity (geographic spread)

In week 50, four regions (in AB(1), ON(2) and QC(1)) reported localized activity and 25 regions (in BC(5), AB(4), SK(3), MB(1), ON(5), QC(4), NS(1), and NL(2)) reported sporadic activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 50

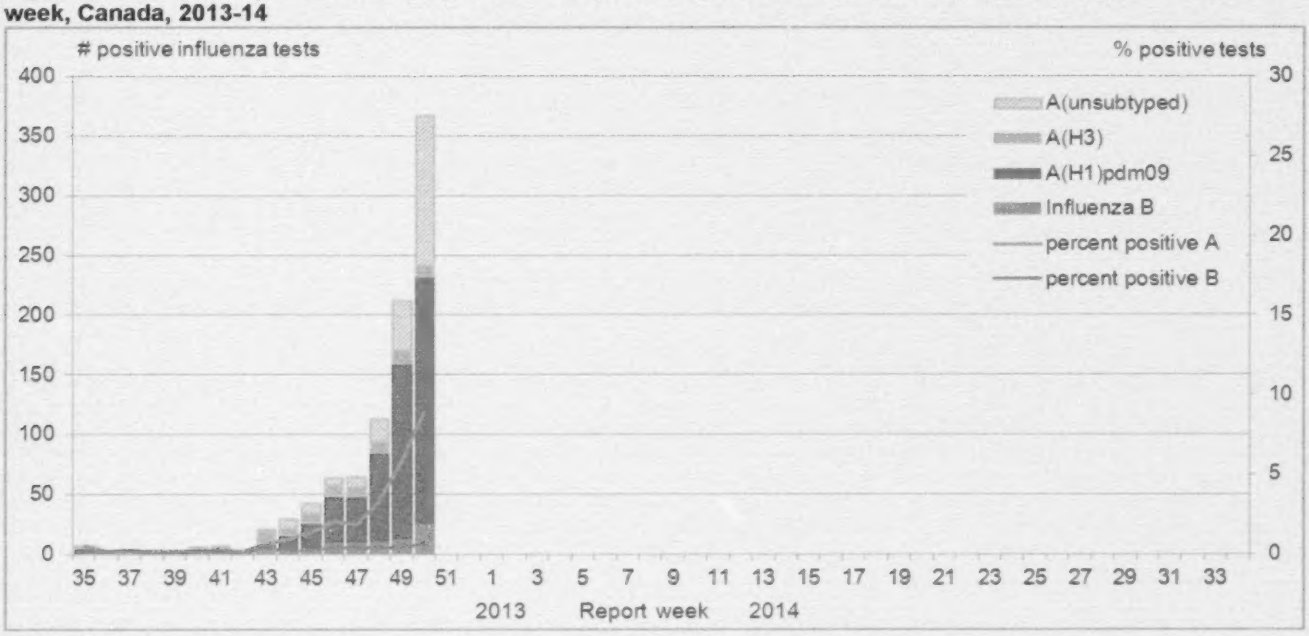


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

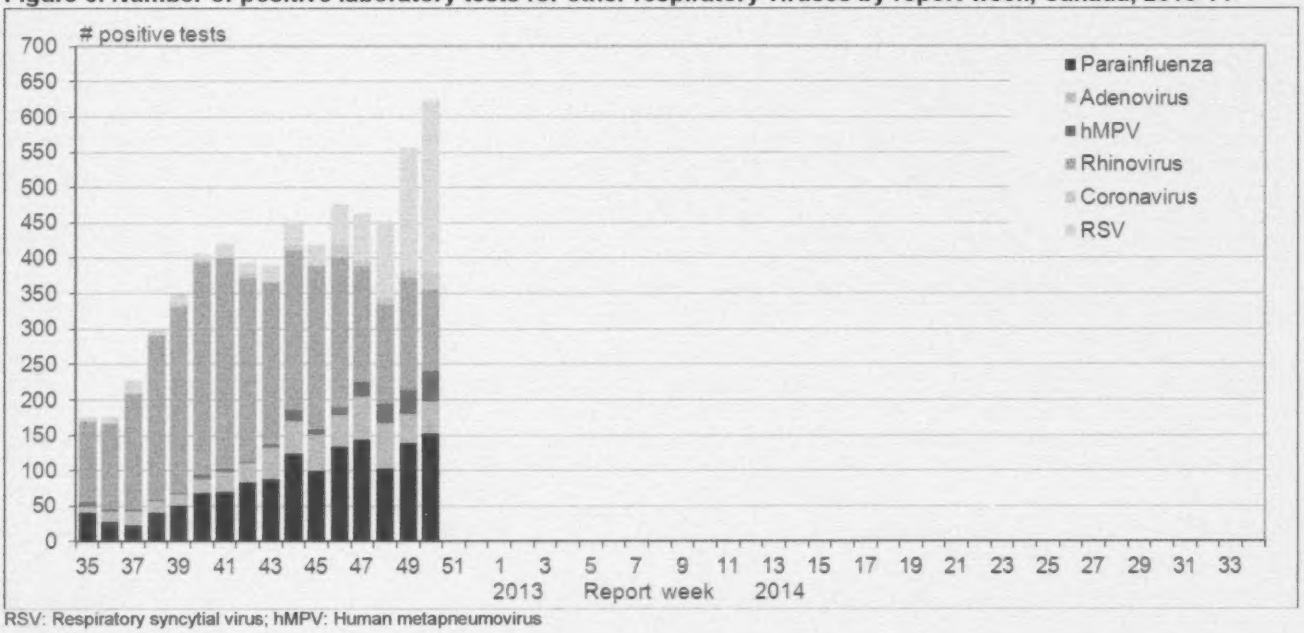
The number of positive influenza tests increased sharply, from 211 in week 49 to 367 in week 50, bringing the percentage of positive influenza tests to 9.6% (Figure 2). Cumulative influenza virus detections to date have been predominantly influenza A (89%). Among subtyped influenza A viruses, 88% (545/619) were A(H1N1)pdm09 (Table 1). Detailed information on age and type/subtype has been received for 909 cases to date this season. Consistent with demographics observed in recent seasons, a larger proportion of cases of A(H3N2) and influenza B were ≥65 years of age (32.7% and 37.5%, respectively) compared to cases of A(H1N1)pdm09 (15.3%).

Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



In week 50, the number of positive tests for RSV continued to increase sharply. RSV was the second most frequently detected virus in week 50, after influenza; and followed by parainfluenza (Figure 3).
For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (December 8 to December 14, 2013)					Cumulative (August 25, 2013 to December 14, 2013)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	24	15	1	8	3	61	43	6	12	7
AB	95	57	1	37	3	262	211	11	40	19
SK	19	10	0	9	0	43	26	0	17	0
MB	3	2	0	1	0	13	12	0	1	5
ON	154	118	7	29	7	356	246	56	54	19
QC	42	0	0	42	14	104	0	0	104	51
NB	0	0	0	0	0	2	1	1	0	0
NS	1	1	0	0	0	1	1	0	0	0
PE	0	0	0	0	0	0	0	0	0	0
NL	2	2	0	0	0	5	5	0	0	0
Canada	**340**	**205**	**9**	**126**	**27**	**847**	**545**	**74**	**228**	**101**
Percentage[2]	92.6%	60.3%	2.6%	37.1%	7.4%	89.3%	64.3%	8.7%	26.9%	10.7%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

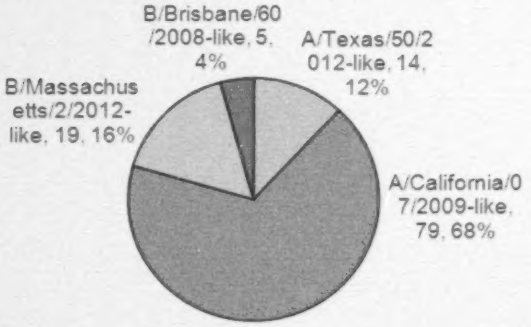
Age groups (years)	Weekly (December 8 to December 14, 2013)					Cumulative (August 25, 2013 to December 14, 2013)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	34	12	2	20	1	147	80	10	57	24	171	18.7%
5-19	26	12	0	14	4	91	60	4	27	25	116	12.7%
20-44	56	17	1	38	5	206	117	4	85	14	220	24.0%
45-64	49	20	0	29	5	203	113	15	75	27	230	25.1%
65+	27	12	2	13	4	118	44	16	58	54	172	18.8%
Unknown	1	0	0	1	0	7	6	0	1	0	7	0.8%
Total	193	73	5	115	19	772	420	49	303	144	916	100.0%
Percentage[2]	91.0%	37.8%	2.6%	59.6%	9.0%	84.3%	54.4%	6.3%	39.2%	15.7%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 117 influenza viruses [14 A(H3N2), 79 A(H1N1)pdm09 and 24 influenza B]. The vast majority (95.7%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine; five influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 117



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009 (H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 118 influenza viruses for resistance to oseltamivir and 116 for resistance to zanamivir, and all were sensitive. Sixty-nine influenza A viruses were tested for amantadine resistance, and all were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

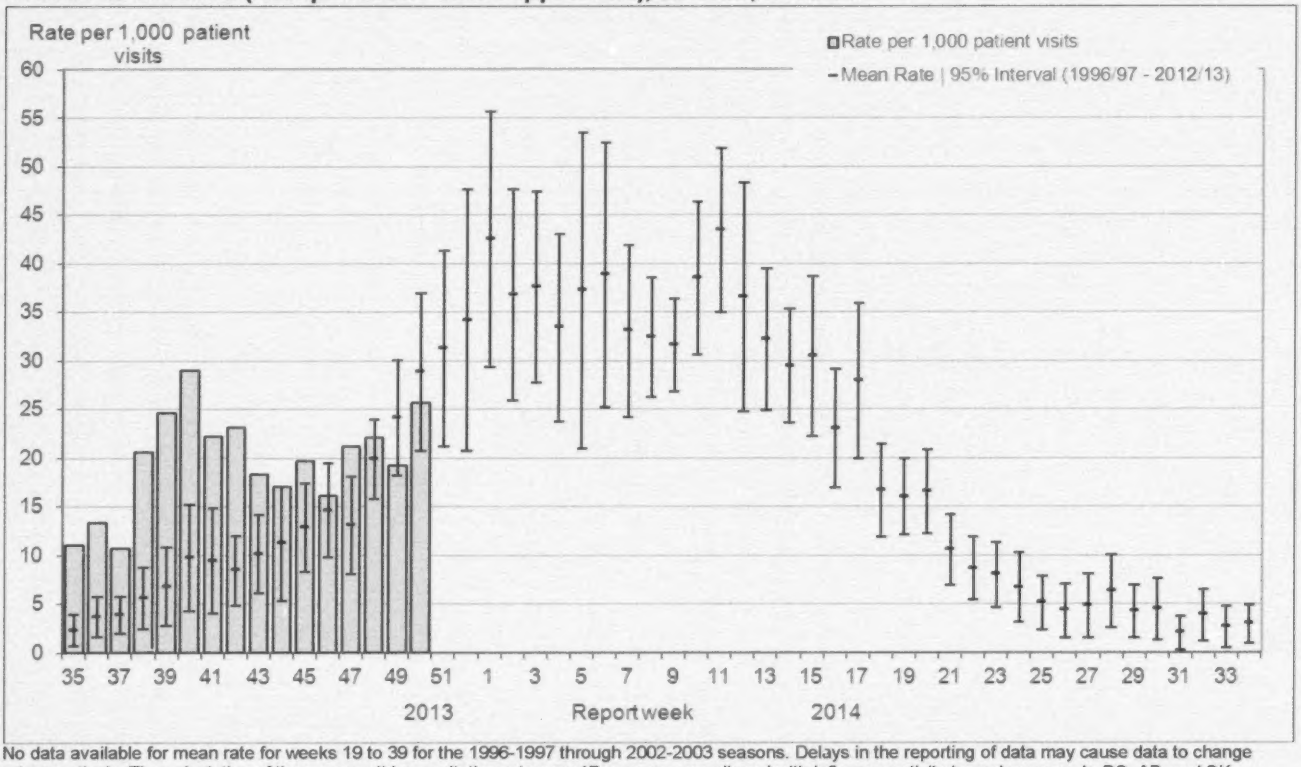
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	15	0	15	0	14	14 (100%)
A (H1N1)	78	0	76	0	55	55 (100%)
B	25	0	25	0	NA[1]	NA[1]
TOTAL	118	0	116	0	69	69 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased from 19.2/1,000 in week 49 to 25.7/1,000 in week 50 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

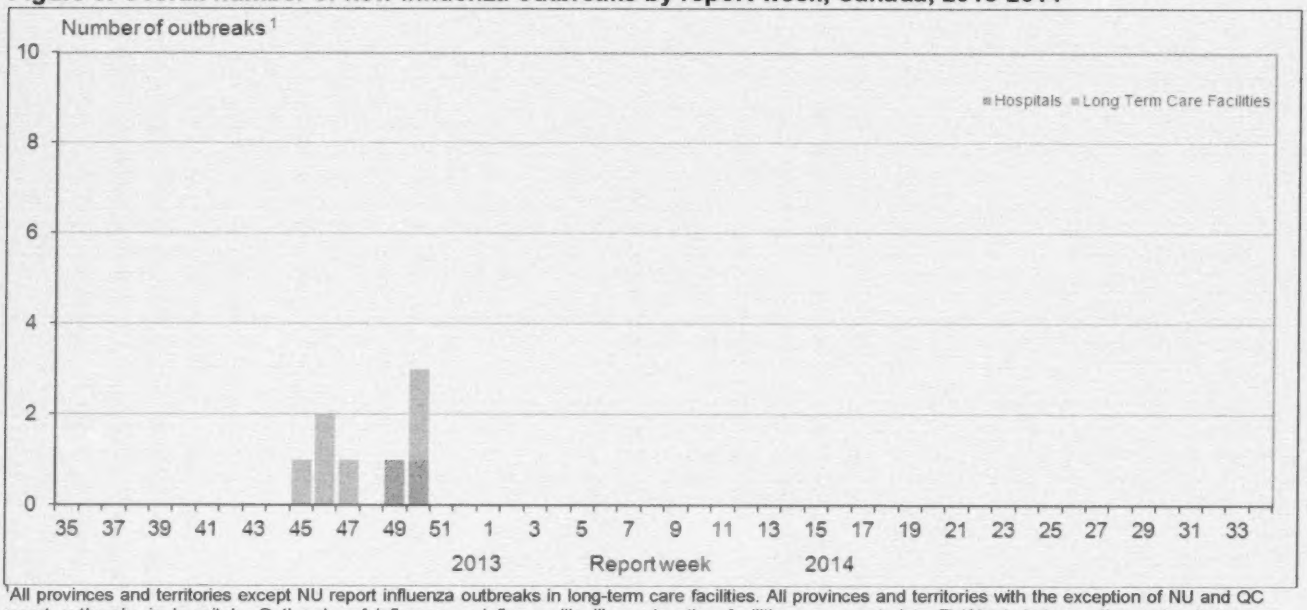


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 50, three new influenza outbreaks were reported: two in long-term care facilities and one in a hospital (Figure 6).

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

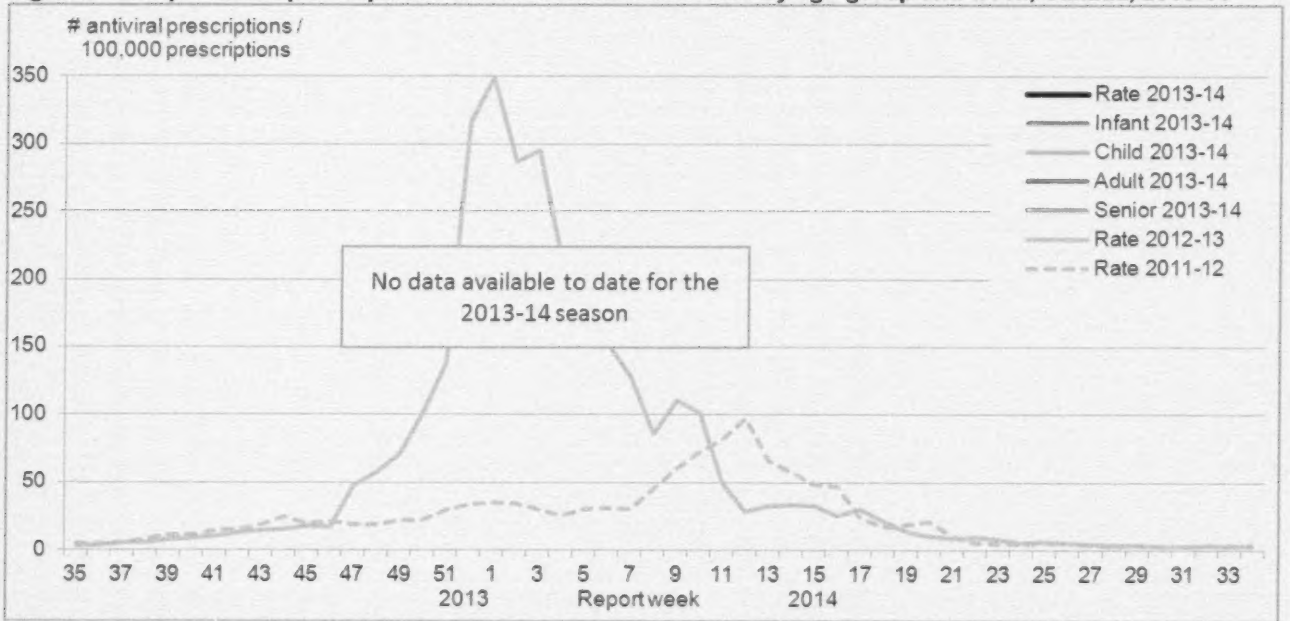


[1] All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

Pharmacy surveillance data on sales of influenza antivirals is not yet available for the 2013-14 season (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 3,000 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 50, 14 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. Thirteen were cases of influenza A: five A(H1N1)pdm09 and eight A(unsubtyped). Three cases were children under 6 months of age, two were 6-23 months of age, five were 2-4 years of age, one was 5-9 years of age and three were 10-16 years of age (Figure 8a). Two ICU admissions were reported in week 50, one child 5-9 years of age with influenza B, and one 10-16 years of age with A(H1N1)pdm09.

To date this season, a total of 53 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, the majority of which have been influenza A (Table 4). Eighteen (34%) of cases have been children under 2 years of age. Five ICU admissions have been reported: two cases with influenza B and three with A(H1N1)pdm09, all children 2 years of age or older. No deaths have been reported (Figure 9a).

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 50, eight new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active* surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network: one adult <20 years of age, one 20-44 years of age, two 45-64 years of age and four ≥65 years of age. Influenza A was identified in eight cases: four A(H1N1)pdm09 and four A(unsubtyped). One ICU admission was reported in an adult ≥65 years of age with A(unsubtyped) (Figure 8b).

To date this season, 41 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 40 with influenza A. The majority (78%) have been adults over 45 years of age (Table 5). ICU admission was required for three hospitalizations, all adults 45-64 years of age with influenza A. No deaths have been reported (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

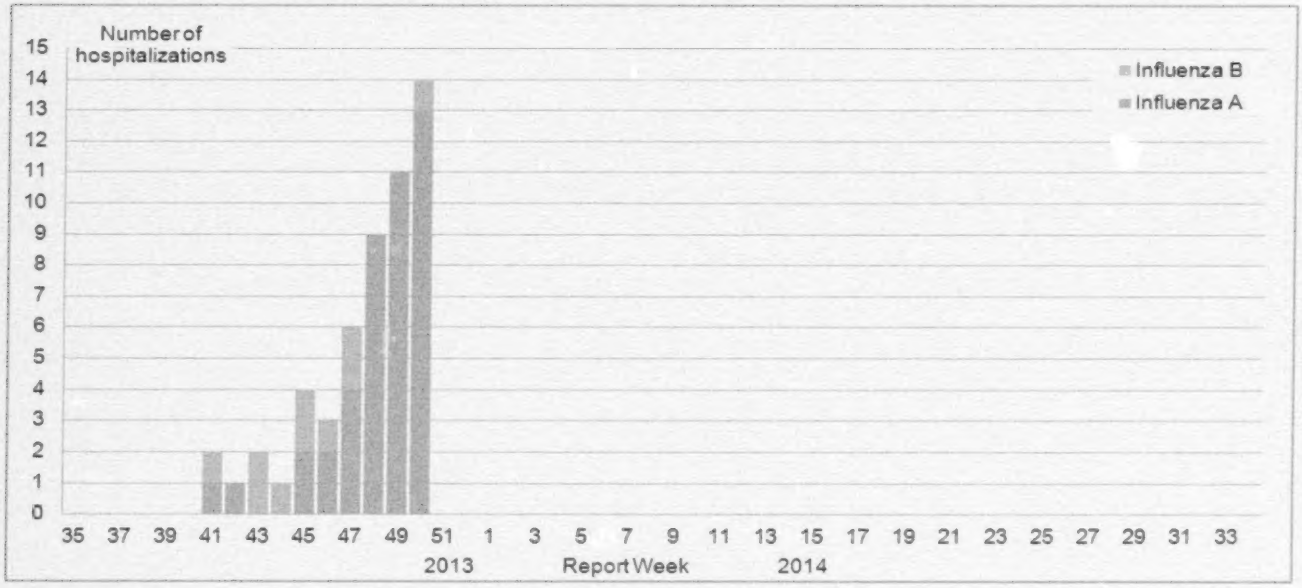
Age groups	Cumulative (Aug. 25, 2013 to Dec. 14, 2013)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	9	2	0	7	1	10 (19%)
6-23m	7	4	0	3	1	8 (15%)
2-4y	12	5	0	7	5	17 (32%)
5-9y	8	4	0	4	2	10 (19%)
10-16y	7	5	0	2	1	8 (15%)
Total	43	20	0	23	10	53
% [1]	81.1%	46.5%	0.0%	53.5%	18.9%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

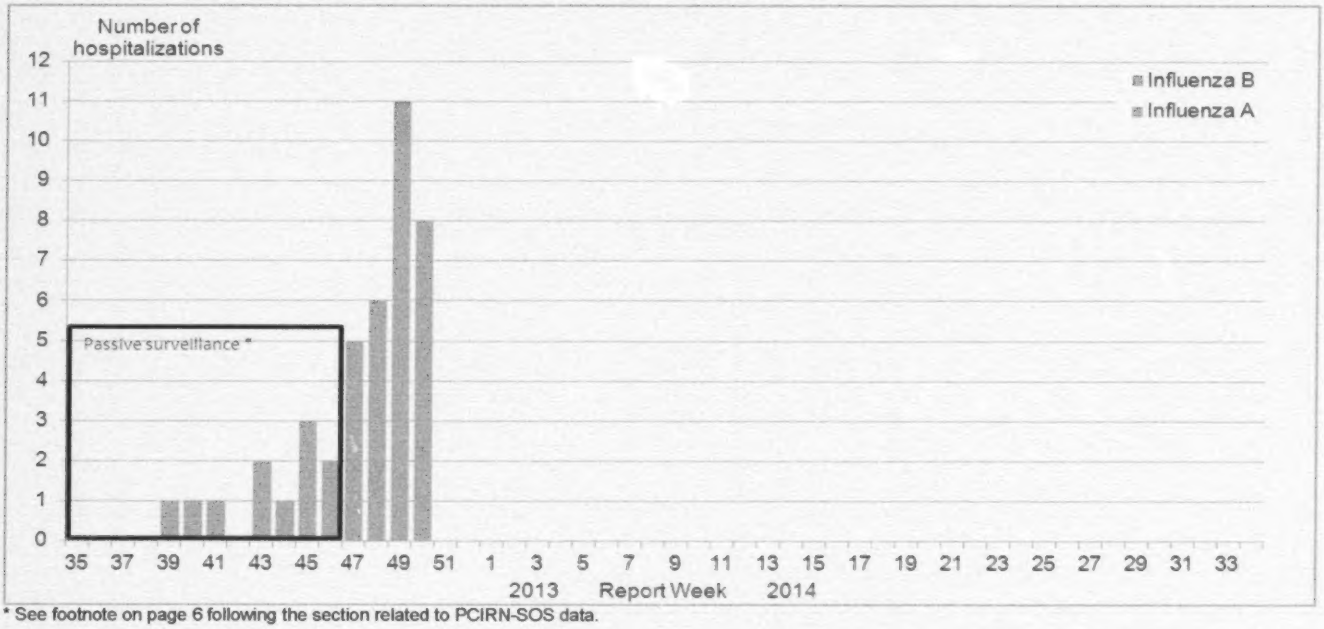
Age groups (years)	Cumulative (Aug. 25, 2013 to Dec. 14, 2013)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	2	1	0	1	0	2 (5%)
20-44	7	4	0	3	0	7 (17%)
45-64	16	7	1	8	1	17 (41%)
65+	15	6	2	7	0	15 (37%)
Total	40	18	3	19	1	41
% [1]	98%	45%	8%	48%	2%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



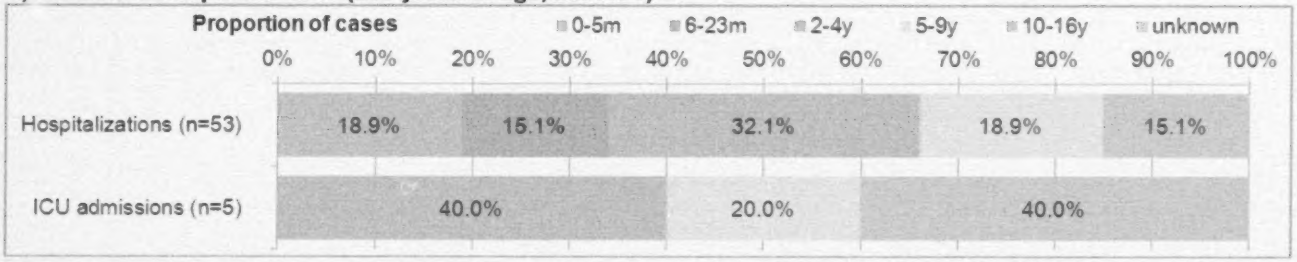
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



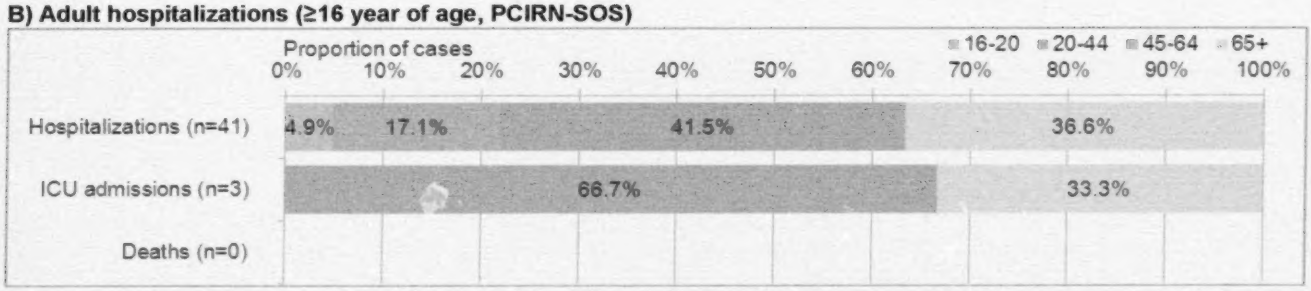
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 50, 68 new laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* The cases were as follows: five children less than 6 months of age, three children 6-23 months, eight children 2-4 years, four children 5-14 years, 11 adults 20-44 years, 22 adults 45-64 years and 15 adults ≥65 years of age. All but two were cases of influenza A, of which 39 were A(H1N1)pdm09, one was A(H3N2) and 26 A(unsubtyped). No ICU admissions were reported. Three deaths were reported in adults 45-64 years of age with influenza A. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 161 influenza-associated hospitalizations have been reported, of which 152 (94.4%) had influenza A and among those 57% were A(H1N1)pdm09 (Table 6). More than half of cases (52.8%) were ≥45 years of age, and 23.6% were under 5 years of age. A greater proportion of cases under 20 years of age had influenza B (12%) compared to those 20 years of age or older (3%). Eight ICU admissions have been reported this season, all cases of influenza A (seven A(H1N1)pdm09 and one A(unsubtyped)). The cases were as follows: one child 2-4 years of age, one 5-14 years of age, one adult 20-44 years of age, four adults 45-64 years of age and one adult ≥65 years of age. Five deaths have been reported: four adults 45-64 years of age and one ≥65 years of age, all with A(H1N1)pdm09. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, NS, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (Aug. 25, 2013 to Dec. 14, 2013)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	33	18	1	14	5	38 (24%)
5-14	10	5	0	5	1	11 (7%)
15-19	2	1	0	1	0	2 (1%)
20-44	25	19	0	6	0	25 (16%)
45-64	49	28	7	14	1	50 (31%)
65+	33	15	6	12	2	35 (22%)
Total	152	86	14	52	9	161
Percentage[1]	94.4%	56.6%	9.2%	34.2%	5.6%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Four new laboratory-confirmed cases of human infection with influenza A(H7N9) have been reported by the World Health Organization in Guangdong province, China. The cases range in age from 38-65 years of age. One case is female and two were reported to have a history of exposure to live poultry. All four cases are reported to be in critical condition. As of 20 December 2013, the WHO has been informed of 147 laboratory-confirmed human cases with avian influenza A(H7N9), including 47 deaths.

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Influenza A(H10N8): One case of human infection with the novel virus influenza A(H10N8) was reported in Jiangxi Province, China. The patient is a 73 year-old female with underlying medical conditions who was admitted to hospital with severe pneumonia and subsequently died. She has a history of exposure to live poultry. Family members and other close contacts have not developed symptoms. This is the first time influenza A(H10N8) has been identified in humans, but the strain was first identified in wild birds in 2007.

WHO Western Pacific Region – Avian influenza A(H10N8)

Human Swine Influenza

Influenza A(H3N2)v: No new cases of human infection with influenza A(H3N2)v were reported in week 50. To date in 2013, a total of 19 A(H3N2)v cases including one hospitalization have been reported.

Centers for Disease Control and Prevention Influenza A(H3N2) Variant Virus

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Since the FluWatch report for week 49, two new cases of human infection with MERS-CoV have been reported by the World Health Organization in Saudi Arabia. The first case is a 51 year-old female with underlying medical conditions with no reported contact with animals. The second case is a 26 year-old female who is a non-Saudi healthcare worker. She is asymptomatic and was reported to have had contact with a previously confirmed case.

Globally, from September 2012 to December 20, 2013, WHO has been informed of a total of 165 laboratory-confirmed cases of infection with MERS-CoV, including 71 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.